

REMARKS

The Examiner has rejected claims 1-17 and 19-20 under 35 U.S.C. 103 over Silver (US 6,455,182) in view of Marecot et al. (US 5,413,984). Applicants respectfully urge that this ground of rejection has been overcome by the instant amendment.

The present invention relates to a catalyst for treating diesel exhaust gas. In particular, it claims a combustion catalyst for treating a suspended particulate matter in a diesel exhaust gas, wherein said combustion catalyst comprises: a carrier *consisting of a ceria-praseodymium oxide*; and a precious metal or an oxide thereof as a catalytic component loaded on the carrier. Support for this amendment can be found in the present specification, for example from page 3, line 21, through page 4, line 6. There it is stated that the carrier may be a ceria-praseodymium oxide. Further support for this carrier material is provided in Examples 13-16 and in Table 8.

The Silver '182 reference relates to catalytic converters. However, as the Examiner agrees, Silver '182 requires ceria and zirconia in their catalyst. That is, zirconia is an essential constituent in their catalyst carriers, which for example comprise ceria-zirconia or ceria-zirconia-praseodymium oxide. In contrast, it is urged that the closed wording of claim 1 of the presently amended claims effectively *excludes* the presence of zirconia from the present carrier. The present claims now state that the inventive catalyst carrier *consists of a ceria-praseodymium oxide*, and thus the present carrier does not contain zirconia. The transitional phrase "consisting of" excludes any element, step, or ingredient not specified in the claim. *In re Gray*, 53 F.2d 520, 11 USPQ 255 (CCPA 1931); *Ex parte Davis*, 80 USPQ 448, 450 (Bd. App. 1948) ("consisting of" defined as "closing the claim to the inclusion of materials other than those recited except for impurities ordinarily associated therewith."). Since zirconia is *excluded* by the present claims but *required* by Silver '182, it is urged that the present claims clearly differ from the cited reference and are non-obvious in view thereof.

To further emphasize the advantage of excluding zirconia from the inventive catalyst, the Applicant has performed supplementary tests for comparing the presently claimed catalysts with those catalysts of Silver '182. Applicants provide herewith a Declaration under 37 CFR 1.132 from inventor Hitoshi Kubo, attesting to the procedures and unexpected results of the originally filed Examples 13-16 as well as the supplementary tests. These supplementary tests show that the presently claimed catalyst is superior in catalytic activity as compared to the zirconia-containing catalysts of Silver '182. Specifically, the supplementary tests assess the catalytic activity as either "good" or "poor", based on whether the temperature for combustion initiation is high or low. In the case of the presently claimed catalyst, it is preferred for the temperature for combustion initiation to be below 300°C. This is clearly stated in the specification, such as at page 21 of the present specification, at lines 3-7 and Table 8. In contrast, all of the zirconia-containing catalysts of the Silver '182 reference have combustion temperatures of 300°C or higher, which shows that they are more difficult to combust. It is urged that the catalysts of the presently claimed invention produce desirable results, which are confirmed by the supplementary tests as recited below.

a) Testing Method: Catalysts were manufactured according to the Silver '182 reference, one of which has a ceria-zirconia carrier and one of which has a ceria-zirconia-praseodymium oxide carrier. Additional catalysts were manufactured according to the present invention, one of which had a carrier consisting of ceria-praseodymium oxide as claimed in claim 1, and one of which had a carrier consisting of ceria-praseodymium oxide-lanthanum oxide as claimed in claim 3. In manufacturing each of the presently claimed catalysts, the procedures of the present specification were followed. Namely, carriers of each type were prepared and each carrier of 1g was impregnated with 0.67g of a 4.5% ruthenium nitrate solution, dried, and thereafter calcined at 500°C for 0.5 hour to obtain a catalyst. The ruthenium loading of the catalyst was 3 wt%. Property evaluation of each catalyst was conducted in a test identical to the combustion tests in the present specification. In the test, the catalysts manufactured were added by and mixed with a particulate substance, namely soot discharged from a diesel engine by 5%,

heated and elevated in temperature, and measured the temperature where the soot initiated combustion, i.e., the active temperature of the catalyst. The measurement condition was the same as that in the present specification.

b) Test Results: Table 1 shows the measurement results of the temperature for combustion initiation of each of the two catalysts of Silver '182 and each of the two catalysts according to the present claims.

TABLE 1: Supplementary Test results

CATALYST	Active Temp
Present invention: CePr Carrier	289.0°C
Present invention: CeO ₂ -Pr ₆ O ₁₁ -La ₂ O ₃ Carrier	285.0°C
Silver '182 Ref: CeZr Carrier	322.8°C
Silver '182 Ref: CeZrPr Carrier	315.2°C

c) Discussion of Results: From the above table, it is shown that the catalyst to which a carrier consisting of ceria-praseodymium oxide was applied has a lower combustion temperature than that of Silver '182's catalyst comprising zirconia. The combustion temperature is lower than 300°C, which is desired in the present invention since the subject's combustion should initiate at a lower temperature. While Table 1 above indeed shows that it is beneficial for the inventive catalyst to have a carrier of cerium and praseodymium oxide, it is pointed out that Silver '182's combination of cerium and praseodymium oxide with zirconia does not produce a desired result. Thus, it is urged that the exclusion of zirconia from the inventive catalysts produces superior results. Furthermore, it is pointed out that the supplementary presence of lanthanum oxide, according to the present claim 3, additionally contributes to lowering the combustion temperature.

Again, it is urged that the *exclusion of zirconia* by the present claims renders the present invention inventive and non-obvious in view of Silver '182.

The Examiner next cites Marecot '984, which relates to a method for preparing multi-metal catalysts. The Examiner takes the position that it would have been obvious to utilize two or more catalytic species in the composition of Silver '182 upon a reading of Marecot '984. However, Applicants thus urge that this point is moot because even if one were to so rely upon Marecot, the present claims would *still fail to be obviated* by the cited art. Again, Silver '182 requires that their catalyst carrier contains zirconia, while zirconia is clearly excluded from the presently amended claims. Marecot '984 does not teach or suggest the characteristic structure of the presently claimed catalyst in such a way that would fill the voids of Silver '182. In fact, Marecot '982 fails to teach a catalyst containing ceria or praseodymium at all. Thus, Applicants submit that even upon a combining of Marecot with Silver '182, one of ordinary skill and common sense in the art would not have been motivated to formulate the presently claimed combustion catalyst for treating a suspended particulate matter in a diesel exhaust gas, wherein said combustion catalyst comprises: a carrier *consisting of* a ceria-praseodymium oxide; and a precious metal or an oxide thereof as a catalytic component loaded on the carrier. For all of the above reasons, it is respectfully urged that the 35 U.S.C. 103 rejection should be withdrawn.

The undersigned respectfully requests re-examination of this application and believes it is now in condition for allowance. Such action is requested. If the Examiner believes there is any matter which prevents allowance of the present application, it is requested that the

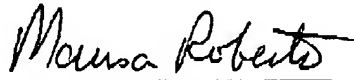
undersigned be contacted to arrange for an interview which may expedite prosecution.

Respectfully submitted,



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I hereby certify that this paper is being facsimile transmitted to the Patent and Trademark Office (FAX No. 571-273-8300) on February 26, 2009.



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